Dynamic region boundary-based control scheme for multiple autonomous underwater vehicles

Abstract

This paper presents a new geometric formation tracking control for Multiple Autonomous Underwater Vehicles (MAUVs). The concept of dynamic region boundary technique and edge-based segmentation approach are utilized in the control formulation. Using this control method, the AUVs are required to move in a specific geometric formulation while the shape of this formation can be scale up or scale down depending on the given task. Various geometric formations can be formed by choosing appropriate objective functions. The stability analysis is carried out with the aid of a Lyapunov-like function. Simulation results on three AUVs are presented to illustrate the performance of the proposed controller.